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NO. VIII.—BY JOSHUA BICKNELL CHAPIN, M.D., PROVIDENCE.

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Asthma.—" Its Nature, Character, Causes, and best Method of Treatment."

"———————— Atque attractus ab alto
Spiritus interdum gemitu gravis; imaque longo
Ilia singultu tendunt ——————."
Georg. Lib. III., line 505.

Asthma, though not immediately a disease of danger, is emphatically one of intense suffering; and as such, if for no other reason, merits a careful investigation.

Many of the authors, who have noticed this disease, seem to have imbibed largely of vulgar notions, and, with a kind of heterogeneous arrangement, have included under the term asthma, almost every variety of disturbed respiration—making no distinction, except in degree, between dyspnœa, properly so called, and the true asthmatic paroxysm. From such carelessness have arisen the numerous discrepancies, inaccuracies and almost utter confusion of the older treatises.

It would appear, from a perusal of the writings of the earlier physicians, that there was hardly a subject connected with either the theory or practice of medicine, upon which their ideas were more vague, or their curative intentions more widely different, than that of disordered respiration. Nor is this strange; for, throughout the entire animal economy, there is not presented a function of more extended sympathy. The organs upon which it is dependent are so numerous, delicate and complicated, both in their individual structure, and their various dependencies, as to render the cause of functional derangement exceedingly obscure, if not altogether problematical.

Most authors have agreed in dividing asthma into two species: humid or moist, and dry asthma; the one of free bronchial excretion—the other of scanty expectoration, or none at all. There appears to be some good reason for this distinction, in directing our curative process, and we shall, as far as practicable, adopt it, though not with that absolute distinctness that marks theory oftener than practice.

The most important matter relative to the treatment of any disease is, the *proximate cause of derangement.* With remote causes we have little to do, or little to any practical purpose. The love of speculation has always kept the field well improved, and the ambitious scholar has here found a wide but misty range over which to broad-cast his assertions and plant his doubts. But with all the labor and all the ingenuity the results have been specious, and speculative, rather than valuable or of much practical account. To the majority of such efforts we may with propriety apply the adage—" *Montes parturient et nascitur mus!*"

Since, then, in the palliation, or cure of this disease, our attention should be directed to the immediately disturbing causes, we will proceed to enumerate some of them; and,

Firstly.—Among the most common causes of asthma, as well as dyspnœa generally, is gastric derangement, and that form of it usually denominated dyspepsia.

Secondly.—Organic derangement; malformation of the spine, and the walls of the chest, or its contents; hypertrophy of the heart, and ossification of the larger bloodvessels.

Thirdly.—Spinal irritation, independent of mechanical derangement.

Fourthly.—Nervous temperament.

First. Gastric derangement.—In a general way, it may be premised, that the disease is usually ushered in by an indescribable sense of tightness about the chest, as if it was closely bound, heaviness over the eyelids, drowsiness, pyrosis, fulness of the stomach, with much flatulence, a sense of weight and tightness about the forehead, headache, a peculiar lassitude, straitness of the præcordia, accompanied with nausea, fulness, eructation, or a disposition to eructate without the ability. I have noticed this as a very urgent and distressing symptom, especially when the disease occurs under the first division of causes. There is sometimes a gaping, as if sleepy, but followed only by anxiety, or disturbed rest. There is also a voiding, in profuse quantity, of pale urine, attended with some urgency at stool. The urine, though usually high colored, is not uniformly so; it is sometimes very highly colored, leaving a copious reddish-brown deposit. It is of importance to note this, since the diminution of the deposit, with the restoration of the natural color, is often one of the first intimations of the termination of the paroxysm, and the approach of convalescence. This inordinate flow of pale urine is sometimes also the only precursor to the paroxysm.

These are the general premonitory symptoms of the disease, whatever may be the cause of its accession. They are rarely all present in the same individual; seldom more than two or three of them are prominent. I might mention one other premonitory symptom, which I think I have sometimes observed—namely, a very peculiarly disturbed respiration, wholly unlike the breathing during the paroxysm, nor yet like that disturbed function so uniformly dependent upon disease; particularly during the early stage of inflammation in the respiratory system. I know not how to compare it—unless it is like a whirring—a *bruit de soufflet*—or the noise of the passing of air from a bellows.

As has already been observed, the disease is one of more distress than of immediate danger. It is a kind of Tantalus, depriving us of the enjoyment of that element, which is all around us, and of which we are the most in need. Being the thief of quiet rest, like other thieves it usually makes its approach at night, when its victim is sleeping most soundly. One reason for this may be, that, in the recumbent position, there is less freedom for a uniform distribution of the sanguineous fluid; the chest is more confined by the weight of the body, the pressure of the front walls of the chest, and also by the falling back of the contents of the abdomen against the diaphragm, thereby diminishing the pleural cavity.

Moreover, as Dr. Good has very justly observed, respiration is so much a voluntary action, that, although it continues during sleep, it is nevertheless considerably aided by the concurrence of the will. Hence the most favorable period for the attack of this complaint is precisely that time in which it usually makes its appearance—during a recumbent position of the body, when the muscles of respiration are destitute of the active stimulus of volition. I have also observed that the hour of sleep is oftener chosen for an attack in its earlier accession than after the paroxysms have become habitual—for then they are constantly occurring at the presence of any and every exciting cause.

From the enjoyment of the soundest and sweetest sleep, the patient is suddenly summoned to a paroxysm of inexpressible anxiety and distress. He longs for the largest liberty, but finds himself most uncomfortably straitened. The sensation is that of being stifled or shut out from the air. He strips himself of everything that may be pressing upon him, breathes with a peculiarly distressing spasmodic action, and a whirring noise, and, if able to rise, rushes involuntarily to the window, or calls, if able to utter, for the free admission of cold air. There is a more or less urgent attempt to cough, and expectorate, succeeded by a discharge of a small quantity of cold frothy mucus; this becoming more viscid and copious as the paroxysm advances, until relief is afforded. The discharge is sometimes streaked with blood, and resembles the ordinary catarrhal discharges from the nasal passages. The pulse is often not much disturbed; it is sometimes very full, but not frequent, and again weak, very irregular, frequent or even intermittent.

Under the first head of causes, the stomach and small intestines are often much distended by flatulence, which, passing off by its proper issues, affords considerable relief. The disease progresses much after the manner described until the subsidence of the paroxysm; the usual period of which is four or five hours—seldom less, often more. If some return of it does not follow him through the day, and muster in full force the succeeding night, the patient may consider himself more than ordinarily fortunate.

Though usually attacking in the night, yet it is in this, as in many other particulars, very capricious. It occasionally occurs at early morn, while at mid-day the breathing is perfectly natural, and remains so until the succeeding night is far advanced, when the same difficulty again returns with the returning light. To such a person the darkness of midnight is better than the dawn of day. I once knew a patient who suffered from an attack every other day for more than two years, precisely at the hour of dining, and previously to taking his meals. He broke up the habit by prolonging his first meal, and omitting the second altogether.

During the paroxysms the temperature of the surface of the body falls somewhat below the standard of health, and the skin is often somewhat shrunken. It has also been remarked by some, that the expectoration varies inversely with the discharge of urine; when the one is full, the other is scanty; but we have never noticed this alternation.

The peculiar whirring noise, above referred to, is produced by the passage of air over the irregular surface, caused by a morbid accumulation of mucus in the bronchial passages. The continually returning difficulty of breathing gives to the asthmatic a peculiar cast, characteristic of the disease.

When asthma has once occurred, its tendency is to become habitual; and the sufferer may, with too much reason, expect its occasional return during the remainder of life, particularly if the first exciting cause cannot be removed. Indeed it is extremely rare that the patient escapes with only one attack. The breathing and general health may be better through the day and early evening, but as night advances, comes the troublesome visiter; inflicting the same torment as on the previous night, though, it may be, with abated severity. Indeed, in most cases each succeeding night finds the patient easier, until free breathing and undisturbed repose are thrice welcome.

The disturbance of respiration is usually aggravated by motion, the pressure of the bed clothes, or anything depending unduly upon the chest, or even in some cases by tight shoes, or whatever disturbs respiration ordinarily. The upright posture is usually the most easy, for the simple reason that in it, the cavity of the chest is most enlarged, and the muscles of respiration play with the least restraint; the back is free, the walls of the chest expand, and the diaphragm falls down upon the descending viscera, thereby increasing the pleural cavity in every possible direction. Hence patients instinctively resort to this position at every approach of this frightful disease.

We will now very briefly give our reasons for believing that gastric derangement is often a mediate cause of the disease in question. It has been denied that asthma is the result of spasmodic action, because the anatomical structure of the parts affected, viz., the bronchial tubes, precludes the possibility of spasmodic action; inasmuch as it is a universally-conceded fact, that muscular fibre is the only tissue obnoxious to this action. Now the bronchial tubes are everywhere, throughout their structure, chequered and surrounded by a collection of minute fibres. These fibres may, in some forms of disease, be easily demonstrated, especially in the larger branches; but ordinarily, and in the minute ramifications, they elude the dissection of the anatomist. Although these fibres do not present, even under the microscope, the ordinary appearance of muscle, yet it has been clearly proved, by a series of galvanic experiments, instituted for the purpose, that they are capable of being excited into alternate contraction and relaxation by the agency of the fluid. They are consequently subject to spasmodic action, or, in other words, they are minute muscular tissues, pervading and enveloping the air tubes and cells, and are intersected and ramified by the par-vagial nerves. Since, then, any irritation of these nerves would occasion the spasmodic action of the fibres through which they ramify, we can readily understand, by the well-substantiated theory of reflex transferred irritation, how any derangement of the gastric apparatus would directly excite the disease in question. Morbid acuteness of the nerves of organic sensibility is oftener depending upon some derangement of the function of digestion, than upon any other cause. The disturbed impression is conveyed to the nervous centres, and thence reflected to the sympathizing organs, viz., the bronchial vessels, by the excito-motor nerves of these organs. Moreover, unless the processes of chymification and chylification are properly performed, the chyle will fail to reach the lungs in a fit state for oxidation in those organs; there will follow an elimination of imperfect blood, and the lungs will not receive their supply of healthy stimulus; the sequence of which will be, undue determination of sanguineous fluid, congestion, irritation; and, in a fit habit, the whole train of alternate spasmodic action, so frightfully distressing in the confirmed asthmatic.

It appears to me that the foregoing view makes it very plain, that want of integrity in the digestive apparatus is oftener a cause of the disease under consideration than is usually conceded.

A little reflection upon the general health of the asthmatic, and the similarity of many of the precursory symptoms, with those of dyspepsia, will render the subject still clearer. Besides, the treatment by which we may expect a cure in the one case, will almost invariably afford more or less relief in the other. In our treatment of the disease when occurring under this class of causes (gastric derangement), we are to pursue the ordinary palliative course. With regard to the relative importance of our treatment as being radical or palliative, while some contend that nothing can be done during the paroxysm, others as stoutly affirm that our curative efforts must cease with the fit. Both these positions may be true. The promise of relief or cure will in most cases depend upon the nature of the exciting causes.

The first object will be to relieve the stomach of its contents, and determine to the surface. To effect this, an emetic may be administered. Ipecac. is the most preferable, as it is the less violent in its operation. The earlier it is given, after the symptoms approach, the better. It often acts most favorably in union with squills, particularly the vinegar of squill. If the vomiting prove excessive, cold water, with a cataplasm over the epigastrium, is highly serviceable. When necessary, the nausea may be protracted by vinegar of squill or lobelia. The only case where *vinegar* of squill is contra-indicated is in cases of acidity, and then magnesia or chalk may be combined with the nauseant. For the correction of flatulence, the usual carminatives, united with assafœtida, unless the latter prove too stimulating, will be of service. The disposition to acidity, especially when combined with a tendency to lithiasis or a podagric diathesis, must be corrected by lime water or the alkaline earths, particularly magnesia. I have known this earth alone effect an entire cure in a case of chronic asthma dependent upon imperfect indigestion. The bowels should be gently moved; but free purging, or repeatedly violent vomiting, are both manifestly injurious. Rhubarb, combined with magnesia and soap, is a good laxative. Small doses of ipecac., with some vegetable bitter, as gentian, or colombo, have proved a healthy stimulant, and contributed largely to a change in the action of the secernents of the stomach. We have done much in allaying irritation by the subnitrate of bismuth. In short, whatever corrects the dyspeptic diathesis, will be found to relieve the asthmatic symptoms. Lobelia, operating as an expectorant and narcotic, we have found useful.—R. Tincturæ lobeliæ, f ʒ ss.; acet. scillæ, f ʒ j. M. Give every hour or two. Also the following in a cold, lax, phlegmatic habit:—R. Tinct. lobeliæ, tinct. assafœtidæ, vini ipecacuanhæ, aa f ʒ ss.

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When there is a manifest disposition to catenate with pleurisy or peripneumonia notha, we have derived great benefit from the following combination:—R. Infus. sennæ, f ℥ ss.; acet. scillæ, f ʒ ss.; liq. ammon. acet., f ℥ ss. M. Cap. q. t. h.

The excessive spasmodic action is often allayed by the inhalation of the smoke of narcotics, especially that of stramonium root. Emollient and carminative enemata are useful where there is a disposition to costiveness, with an irritable condition of the abdominal viscera. An excellent sedative diaphoretic is the Dover's powder, exhibited in pretty full doses every three or four hours. Diuretics, in combination with opium, are proper, as revellents. They are most serviceable in cachectic, dropsical habits. The following recipe may be given with this intention:—R. Pulv. jalapæ, gr. x.; pulv. potassæ bitart., ʒ j.; pulv. opii, gr. i. M. Administered twice a day.

For the immediate *relief* of the paroxysm, there is no class of remedies upon which we may so confidently depend as upon expectorants. They relieve the enlarged vessels. When the secretion is copious, they remove it, and where it is scanty they excite a remedial flow. As observed above, squill and ipecac. in combination form our best dependence. It sometimes, though rarely, happens that the diuretic action of the former should be checked by opium. Nauseating doses of the above may be administered *pro re nata*. Alliaceous demulcents are often exhibited with advantage.

In full two thirds of the patients that have come under our observation laboring with asthma, the symptoms of indigestion in some form have been prominent, both before and after the attack. Pyrosis, dulness, præcordial oppression, fulness, nausea, flatulence, constipation, &c., the constant symptoms of the one, are no less characteristic of the asthmatic habit. Notwithstanding all this, I believe that asthma does not so often depend upon a simple physical condition of the system, as upon a positive and actual imperfection, or contamination of the blood. The latter state is produced by a deficient, or imperfect assimilation of matter going to make up the sanguineous fluid; dependent upon a chronic derangement in the digestive, or assimilative apparatus. This want of integrity in the blood, by the sympathy of irritation, produces a constant tendency to a preternatural determination to some part, and every one, familiar with the phenomena of respiration, knows that the organs concerned in the performance of this function, are, of all others, the most liable to suffer from sanguineous turgescence; and, as a preternatural fulness is often an immediate cause of the asthmatic paroxysm, we can again easily see how large a share imperfect digestion has in its production.

Much may be accomplished in the disease occurring under this form, by a well-pursued, judicious prophylactic or hygienic treatment. The first thing of importance is, that the diet should be mild, nutritious and easily digested. Those articles of food should in all cases be selected, which yield the most nourishment with the least tax upon the digestive and assimilative apparatus. All high-seasoned food, as pastry in all its forms, newly-baked bread, particularly when heavy and clammy (of which, for the credit of our housewives, there is far too much), fish, &c., should be avoided. Not that I would be understood to recommend a vegetable diet, but to use the more stimulating articles of food sparingly. Moderation in eating, combined with proper exercise in the open air, will contribute more to a healthy action, a due supply of proper blood, and a consequent equal distribution of that vital fluid, than anything besides. It is also of importance that the asthmatic should allow himself sufficient healthy exercise in the open air and light, and, when practicable, in the open fields. Attention to these particulars will contribute much to that free, easy and cheerful state of mind, of so much importance to perfect well-being. This becomes of more consequence inasmuch as the asthmatic is peculiarly exposed to the ill effects of gloomy, depressing mental emotions, and an irritable, nervous habit. Regular seasons for partaking food, and early hours for rest and rising, should be observed.

Since an asthmatic temperament is so easily affected by atmospheric vicissitudes, so subject to suffer from a torpid action of the cutaneous emunctories, ordinary precaution will dictate the use of light and warm clothing, to protect from the evils of the one, and to stimulate the functions of the other.

I would again caution against the use of too little food, as an evil next in degree to too much. Proper repletion will render to the organs of digestion that degree of stimulus necessary to a healthy energy. Each organ needs its appropriate exercise, and requires a supply of that upon which it is to perform its functions.

[To be concluded next week.]

MEMOIR OF LUKE HOWE, M.D., LATE OF JAFFREY, N. H.

[Communicated for the Boston Medical and Surgical Journal.]

The following brief sketch of the life of Dr. Howe was read before the New Hampshire Medical Society, at their late annual meeting in June, by James Batcheller, M.D., of Marlborough. The Society passed a vote to have it published in the Boston Medical and Surgical Journal.

Luke Howe, the subject of the following memoir, was born at Jaffrey, N. H., March 28th, 1787. His father, the late Dr. Adonijah Howe, was a respectable and much-esteemed physician, and a worthy and very exemplary citizen. He commenced the practice of medicine at Jaffrey, soon after the town was incorporated. He had four sons, all of whom received a collegiate education. Three studied the profession of medicine, and became eminent. The youngest son studied divinity; but the period of his earthly existence was short. His early death was deeply lamented by the church and parishioners over whom he was settled. The whole family, consisting of four sons and three daughters, are now, with the exception of one daughter, numbered with the dead.

Dr. Luke Howe did not commence his literary studies till 20 years of age. Up to this period he had been engaged in, and felt somewhat attached to, agricultural pursuits. He, however, changed his views, and commenced preparing himself to enter college with a most commendable degree of industry and perseverance. He entered Dartmouth College, as Sophomore, in 1808, and graduated in 1811. Soon after leaving college he commenced the study of law, in his native town, with Samuel Dakin, Esq. He also spent considerable time in the office of the Hon. Samuel C. Allen, of Northfield, Mass., who was for many years a member of Congress. He closed his legal studies in the office of the Hon. and distinguished Nathan Dane, of Beverly, Mass. He commenced the practice of law in Jaffrey, with the prospect of becoming distinguished. But he had been in business but about one year, when his brother, Dr. Adonijah Howe, Jr., who was associated with his father in the practice of medicine, was suddenly removed by death. This truly grievous dispensation disappointed the hopes and expectations of the father, who being in the decline of life was anxious to resign his business into the hands of his son. He strenuously urged and importuned his son Luke to relinquish the practice of law, and commence the study of medicine. The son finally yielded to the solicitations of his father, and commenced the study of physic with him. He attended medical lectures at Boston and Hanover, and received the degree of M.D. from Dartmouth College in the year 1818. He associated himself in business with his father in Jaffrey, where he continued till his death.

In the few brief remarks I have to offer in relation to Dr. Howe as a physician, I do not wish to exhibit him as the wonder of the age in which he lived, or as far outstripping all his cotemporaries. Could he speak from the grave, he would denounce such a description as false and fulsome flattery. I wish simply to describe him as he was—a very industrious, studious, investigating, discriminating and faithful physician—highly beloved and esteemed by his patrons. The limited circle in which most country physicians move, usually prevents their fame from being published to any great extent, let them be ever so meritorious. A single meritorious act, performed by a city physician, will probably be chanted by tens of thousands, and pass from city to city; while similar or superior acts of the country physician, will be perhaps merely noticed by a few friends in the immediate proximity to the transaction. There are many traits in the character of Dr. Howe, highly commendable and worthy of imitation. In his intercourse with neighboring physicians, his conduct was in an unusual degree honest, frank, gentlemanly and confiding. He never was guilty of an attempt to shake the confidence of friends in the attending physician, by significant nods and jesuitical inuendoes, of which some physicians, claiming a high standing, are guilty. I will hazard the assertion that there was not a physician favored with his intimate acquaintance, who was not his personal friend. He possessed an inventive genius. He was not content invariably to walk in the old paths marked out by his predecessors, but would occasionally step aside as a bold pioneer, in pursuit of new discoveries and improvements. He had considerable taste for surgery, but his local situation was unfavorable for extensive surgical practice, being in the immediate vicinity of one of the most distinguished surgeons in the State, between whom and himself, I am happy I can truly say, there existed the most intimate and cordial friendship. Dr. Howe felt no desire to place himself in the position of a rival. He, however, performed a few cases of amputation, and was frequently called to cases of fracture and dislocation. During the last years of his life he became associated with a young physician as partner, which gave him more leisure to pursue his favorite inclination of attempting to make improvement in the apparatus used in certain surgical operations. He has invented several new kinds of splints, calculated for fracture of the femur, tibia and fibula, the fore-arm, and also the clavicle. He invented a new truss; also what he terms the semicircular tourniquet. He attempted some improvement in the abdominal supporter. They will doubtless prove a valuable acquisition to the store of medical knowledge of the country. Of these models, most of them, I believe, have been exhibited before the N. H. Medical Society, and received due commendation as constituting valuable improvements. The Trustees of the Mechanics' Association of the city of Boston, presented Dr. Howe with a silver medal in commendation for the valuable articles which were exhibited and examined by them at a recent fair. A few years since, Dr. Howe published, in the Boston Medical and Surgical Journal, a description of the articles he had invented, with the mode of application, and various valuable suggestions. It was also published in a pamphlet form, with accurate plates. His apparatus for fracture of the tibia and fibula, which he terms "the posterior concave splint," is a most valuable improvement, and ought, in my opinion, to be universally adopted, as it fulfils all the indications more certainly than any other method—mitigating, in a great degree, the suffering of the patient, as he can leave his bed every day if he desires, and is almost sure to prevent displacement. I wish every physician would try it. His semicircular tourniquet has one peculiar advantage, as by it we can effectually compress a single artery, and leave the circulation of all the other vessels of the limb unimpeded. Dr. Howe frequently contributed valuable articles for the Medical Journals, showing much research and a discriminating mind.

He devoted much time to investigating the disease peculiar to clergymen, which he termed the "Minister's Ail." The result of his investigations he read before the State Society at their meeting in June previous to his death. This article showed much laborious research, and embodied many valuable practical facts and suggestions. Dr. Howe sustained, through life, a character for strict moral honesty and integrity. He at various times held many minor offices, the duties of which he discharged to the satisfaction of all. At the time of his death he was President of the N. H. Medical Society.

He was actively engaged in the various humane enterprises of the day, having for their object the elevation and amelioration of the human family. The cause of temperance received a great share of his benevolence. He drafted the first set of resolutions that were adopted by any medical society on the subject of temperance, and presented them to the Western District of the N. H. Medical Society. He delivered many lectures on the subject.

His fees for medical services were low, especially to the poor. On the subject of religion, he was a believer in those doctrines termed evangelical. Some eight or nine years before his death, he made a public profession by uniting with the Congregational church. His Christian walk and conversation proved him to be a sincere and devoted member. He was a very affectionate husband, and a most kind and indulgent parent. He was not a blank in society. He had no leisure for idleness. It was a maxim with him to fill up time with duties. He spent his whole time in visiting the sick, perusing his library, and contemplating new methods of improvement in the profession. He felt a deep interest in the elevation of the profession, and was a deadly enemy to quackery and empiricism in whatever form. He had no faith in the secret nostrums of the day, comprising the whole family of the popular patent medicines. Some might have thought him too severe in his denunciation, but those best acquainted knew he was influenced by a sincere regard for the welfare of the community, rather than any sinister or unworthy motive of self-interest. He was in favor of a thorough education preparatory to the commencement of the study of medicine. This, connected with a more thorough study of the profession, would, in his opinion, be the most effectual means of discountenancing empiricism and preventing its increase.

After all, Dr. Howe laid no claim to perfection; he also had his faults. But this is only saying that he was a man, subject to the imperfections, the passions, the temptations and weakness of poor, frail, dependent human nature. But it may truly be said that he restrained, overcame and counteracted many of the evil propensities of our natures, when thousands fail in the conflict.

The final, closing scene was sudden and unexpected. He visited

Boston and Andover, enjoying an unusual flow of spirits. At Andover he read his dissertation on the disease peculiar to clergymen, before the Faculty and students of the Theological Institution, which excited much interest. The students, as an expression of their high regard for the author, and for the valuable suggestions contained in the address, wrote a letter of thanks to Dr. Howe, expressing in the most kind and flattering manner their high appreciation of the value of his discourse. Their letter was received by his friends on the day of his funeral. During his pleasing journey to Boston and Andover, he was under constant excitement, receiving the gratulations of friends, and many testimonials of regard. He arrived home on Wednesday evening, and considered himself in usual health. In the morning he complained of a little indisposition; but he dressed and left his bed every day during his sickness. No dangerous symptoms were discovered till on Thursday morning, of the next week, Dr. Richardson, his partner, who had visited him frequently, discovered symptoms unfavorable, and indicating danger. I was requested to visit him. This was on the ninth day of his sickness. I did not arrive till 11 o'clock, P. M. I found him in the arms of death. He recognized me, told me he supposed he was dying, reached out his cold hand, and affectionately pressed mine as the last token of friendship and remembrance. His spirit took its flight December 24, 1841. On his death-bed he enjoyed the unspeakable consolations of religion, and departed in the full belief of a glorious immortality. His funeral was attended by an unusual number of his medical brethren, and a large concourse of his immediate friends and townsmen, who evinced their deep sorrow by signs more expressive than words.

FATAL DISEASE ORIGINATING IN COSTIVENESS.

[Communicated for the Boston Medical and Surgical Journal.]

Mrs. G., about 40 years old, married woman, with three children, had lived for several past years "*absque marito.*" Her constitution from her youth was supposed to be rather delicate, though she seemed to enjoy perfect health. Her first definite ail appeared to be costiveness and distress from food. She endeavored to obviate these symptoms by cathartics *alone*. They produced the desired effect, but during and after the operation she thought it necessary to abstain from *all exercise*, and take the *smallest* quantity of the most *simple* nourishment. Of course the costiveness recurred with greater severity after each cathartic. These bad consequences were always incorrectly ascribed to the medicine. Of course each medicine was rarely repeated, but some new one substituted. This very sage mode of treatment was continued from year to year, with occasional apparent relief. Consulted good medical advice at long intervals, and obtained various cath. mixtures, and the necessary conditions as to exercise and diet; but looking only to the *medicine* for a cure, she almost or quite disregarded the additional advice. She also at times had advice from strengthening doctors (Dr. Richardson, for instance, of

Bitter notoriety), from humor doctors (Stewart, perhaps), or followed after Brandreth and the rest of the drastic fraternity. Finally, the symptoms assumed a more distressing and alarming appearance. Food of almost every kind distressed her, all exercise seemed out of the question; in short, she was completely bed-ridden, with frequent and severe pain or distress of stomach. This by some was called tic douloureux of the stomach, from a supposed transfer of this affliction of her face, which had previously much troubled her. It was with difficulty she succeeded in getting into her stomach the smallest bulk of the most simple food. Towards the close of life, she was supported almost entirely with small quantities of cordial medicine or spirituous applications to the skin. Before she died she lost her sight completely, her hearing almost entirely, and also the power of articulation. She was able to move her fingers and the muscles of her face, but was always turned and raised in bed, and fed by manual assistance. The stomach finally rejected everything, and spirit to the mouth or skin alone supported life. She had no natural motion of the bowels for a month before death, and but a few and very small ones, of a light yellow color, by injections. Before death she was seen several times by Dr. Alden, of Randolph, who without a particular examination supposed it probable she labored under the hopeless disease of schirrhus of one or both orifices of the stomach. Dr. Stimpson, of Dedham, also was called several times, and finally gave as advice, that she should abstain from all drugs as remedies; but also recommended the course most likely to relieve. (What his diagnosis was, is not known.) The patient and her friends drew their own inferences from *part* of what he said. They reasoned thus: "the doctor pronounces her beyond the reach of all his drugs—therefore her case is incurable, hopeless and necessarily fatal." (False logic.)

Post Obit.—On opening the abdomen (the parietes of which were much less emaciated than customary with those who die with cancerous affection) there was no appearance of stomach, and no appearance of disease, except slight enlargement of the liver, and enlargement of the gall bladder (four times natural size), filled with fluid bile, blacker than ink. Looking more particularly after the stomach, it was found in its natural situation, *uncommonly* contracted, but with no appearance of "*valvulæ conniventes*" of small intestines or of longitudinal bands of large intestines. The curve of the stomach was natural, its diameter about that of a healthy duodenum, and completely empty. Small intestines moderately distended; large intestines full of dry, rather hard fæces, of a light yellow color. Stomach was opened and found completely empty; color less vivid than natural, but very pale; no ulceration, no obstruction of either passage. Œsophagus little redder than natural (mouth had been very sore and inflamed before death). No appearance of any bile in stomach. Duodenum rather paler than natural, nearly empty, with no appearance of bile. The bile, as said before, was very black, consequently none passed from liver or gall-bladder. Ductus communis was divided, and found of a gristly hardness, and *apparently* obstructed entirely. Lungs, heart, kidneys, bladder and intestines of perfectly healthy appearance. Uterus slightly enlarged.

As the complete obstruction of bile would account for all the symptoms while she was living, and for her subsequent death, the examination was closed. The stomach rejected all food, because of the absence of bile, its natural stimulus and protection. Was there no bile, from physical obstruction? or did the stomach refuse to receive its natural stimulus, because deprived so long and so often of its natural food? Or did the extreme sensitiveness of the internal coats of the stomach arise from some other cause? Costiveness seems to have been the first cause; want of proper food, the next; extreme sensitiveness, the third; and complete obstruction (physical or sympathetic), the last. The small and large intestines, being deficient of bile, did not fully perform their natural function (to help digest and forward what passes from the stomach). Whatever came into them became dry and hard from absorption, but there was no peristaltic action; and they retained whatever was put into them, as a bag retains its contents till they are removed or the bag bursts.

I hope the relation of these *facts* may enforce on physicians the great necessity of giving caution to their patients; and on patients, the necessity of implicit confidence in their medical adviser, and strict obedience to his directions. Yours respectfully,

Canton, Sept. 20, 1843. T. K. Thomas, Jr., M.D.

THE TARTAR ON THE TEETH.

Read by M. Mandl at the Academy of Sciences.

A soft substance, of a whitish or yellowish color, is habitually deposited upon the teeth, and sometimes becomes firmly fixed to them. This substance may accumulate in greater quantities, and growing firmer by degrees may form the hard and dry concretion known under the name of tartar. It increases in bulk by the fresh layers deposited on its surface. According to an analysis made by Vauquelin and Laugier, tartar consists of sixty-six parts of phosphate of lime, nine of carbonate of lime, fourteen of animal matter (of a yellowish white, different from the gelatine of bones), and three parts of oxide of iron and phosphate of magnesia. Other chemists have found the proportions different; sometimes the phosphate of lime was more abundant, and sometimes the animal matter (or mucus).

Authors have been much occupied with the manner in which this substance is produced. Is it a secretion, as some have written? Is it a deposit of the earthy salts contained in the saliva, and precipitated by a chemical agent, as medical books have reported for ages? Is it an earthy exhalation from the capillaries of the blood, to which the mucous membrane of diseased gums is prone?

Not one of these hypotheses has been proved; not one has the sanction of direct experience. Moreover, they are all sufficiently refuted by the following investigations into the composition of tartar.

It results from the experiments of M. Mandl that tartar is nothing but a deposit of the skeletons of dead infusoria, agglutinated by dried mucus; nearly as certain earths, according to the researches of M. Ehrenberg, are composed almost entirely of fossil infusoria.

In fact, if we take some of the mucous matter which is accumulated upon and between the teeth, and dilute it with a little distilled water previously warmed, we shall immediately perceive a host of infusoria, which move about with great liveliness. Their size varies from 1-500 to several hundreths of a millimetre; and their shape is the same as that of the infusoria described by authors under the name of *vibriones.*

The presence of infusoria in mucus was pointed out by Leuwenhoek; but M. Mandl sets forth in all their details, the shape, liveliness, and other qualities of these infusoria.

These animals also exist in great quantity in patients who have been several days on low diet. They also constitute the greatest part of the mucous coating of the tongue in persons whose digestion is disordered. (According to an analysis of M. Denys, the chemical characters of this coating agree with those of tartar.)

After having ascertained the presence of infusoria in the mucus of the mouth, M. Mandl tried to find out whether these animals assist in forming the tartar also. For this purpose he softened a particle of tartar in a drop of water for twenty or thirty minutes, and after compressing it between the two pieces of glass, he distinctly saw that the tartar was composed of dead vibriones, of different sizes, but generally measuring several hundredths of a millimetre, united by an organic substance (dried mucus) the quantity of which is variable. The tartar is often almost entirely composed of these vibriones.

Hence it follows that these vibriones are provided with a shell, or inorganic skeleton [*squelette inorganique*], since tartar is found consisting entirely of these vibriones.

This shows, too, why cleanliness, and the use of tonic or alcoholic fluids, prevent the formation of tartar by preventing the production of the infusoria.

To recapitulate, it appears:

1. That there is a great number of vibriones in the mucus which accumulates around and between the teeth.

2. That tartar arises from an accumulation of dead vibriones, and consequently cannot be considered either as a calcareous substance deposited by the saliva, or as a peculiar secretion.

This discovery of the composition of tartar is as new with reference to Leuwenhoek's observation, as the researches of Ehrenberg touching the composition of diluvial soils were new in reference to the well-known fact of the existence of infusoria in water.—*Gazette Medicale.*

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON, OCTOBER 11, 1843.

Counsellor's Meeting.—On Wednesday last, the Council of the Massachusetts Medical Society held a semi-annual session at the Masonic Temple, in this city. Of late, these meetings are remarkably quiet, and seasonably come to a close. This is, in fact, the true method of legislating—talking but little, and doing promptly what is to be done. Physicians, formerly, were proverbially poor business men, on account of the indomitable determination of some individuals to speak on all occasions and upon every subject, however trifling or unimportant it might be. Certainly the age is improving in one respect, since the faculty are beginning to be distinguished for despatch in their public meetings.

Medical Matters in Tennessee.—At this late period—for the transactions about to be mentioned took place last May—a record of the doings of the Medical Society of Tennessee has been received.

On the 14th anniversary the members met in the city of Nashville, where they transacted their business in a style characteristic of men who thoroughly accomplish whatever they undertake. In the United States there is not another body of medical gentlemen distinguished for such spirited activity and boldness in official affairs, as the energetic physicians of Tennessee. If one of their number is selected for the performance of any particular duty, and he fails to do it, after having voluntarily accepted the trust, he is mulcted in a specific sum—a fine, in cash, that will ever after make him remember that he cannot trifle even with his intimate friends, where business is concerned. Thus, Dr. Smiley, appointed, among others, to read a case—being absent, was fined $2, for "*neglect of duty.*" Dr. Goodlet, absent—for non-performance of duty, not reporting one or more cases, by previous agreement, $2. Dr. Saudek fined $2 for a similar offence. Dr. Jones, of Jackson, came near the same penalty, but made an apology through the president and got indulgence till the next meeting. Dr. Barbour, "not having yet appeared, was fined $10 for omission of duty." This must either have been an aggravated offence, or the society was deprived of eight dollars' worth of pleasure and instruction, more than where the fine was only two. Dr. Brown, of Columbus, was fined $25 for not reading an annual oration, "*already a year in arrear.*" No case read by Dr. Cliffe—fined $2. Dr. Wilson, of Pleasant Exchange—non-performance of duty, $2. So they were knocked off, auctioneer like, and about as fast, which must have been any thing but a *pleasant exchange* for some of them.

On the other hand, several excellent papers were produced, exceedingly creditable to the authors. Dr. Yandell addressed the Society on the life and character of Dr. Samuel Hogg, late President, which is appended to the general report, and for which he received fifty dollars. A plan was proposed for the speedy organization of an anatomical museum, or rather cabinet of anatomical and pathological preparations, to be located in the city of Nashville. For this very desirable purpose, it was resolved that each member should annually contribute two dollars.

Another resolution was adopted, that may yet be of incalculable importance to the profession and the inhabitants of the State. It is now felony to take a dead body in Tennessee, and punishable with imprisonment in the penitentiary for not less than two nor more than five years. A committee of three was chosen to memorialize the Legislature, and ask a reasonable modification of the law, to be in accordance with the spirit of the age, and in conformity to the system of other States. It is abominable to require that physicians and surgeons shall understand anatomy, thoroughly, and yet make it a crime to be detected in the act of learning just what the statute declares they shall unconditionally know. This movement of the Society is very wise, and shows, what we have long entertained in regard to that body, that it is constituted of able, active, far-seeing men.

Dr. Richardson read a very able address, says the report, which was directed to be published in the Louisville Journal. Dr. H. R. Roberts, of Columbia, was selected for orator next year.

Paine's Materia Medica.—A correspondent is desirous of calling the attention of the profession to the neat and useful little book prepared by Dr. Martyn Paine, of New York, some one or two years ago, which was noticed in the Journal at the time of its appearance. The writer of a note before us remarks—"Let any medical man examine that work, and keep it on his table as a book of reference, and if I am not mistaken, he will find himself amply remunerated for his trouble and expense." We concur very fully in this opinion—believing the treatise altogether superior to very many publications of higher pretensions. Dr. Paine is an accurate physician; his facts are numerous, and certainly are as valuable as those from any other source.

Hydro-Medicant.—This is a term derived from the Greek words signifying the application of remedies with moisture, which Dr. Mattson, of this city, has recently invented for administering what he terms *hydro-medicated baths*, and also the Russian or vapor bath. It is particularly recommended by its portability, for the entire apparatus does not weigh more than 18 or 20 pounds, and may be packed in a box—making a part of the invention—which measures 15 by 27 inches, with a depth of 8 inches. The tent, in which the individual takes his seat during the bath, may be erected in a few minutes, and makes a handsome piece of furniture. The vapor is generated by means of a newly-constructed wire-gauze furnace and spirit lamp, whereby the water is boiled in about three minutes, so that it does not require more than 10 minutes, including the time necessary for erecting the tent, to get a bath in readiness. The amount of alcohol consumed does not cost more than three cents. The apparatus, moreover, is so constructed that an individual may take a bath, if he desires it, without the aid of an assistant, which is no doubt a desideratum. Dr. Mattson intends to accompany the apparatus with a treatise giving full directions for the management and employment of the latter, both as a luxury, and a remedial agent in those forms of disease in which it has been found appropriate and useful. The inventor is anxious to call the attention of practising physicians to this economical, and, as he thinks, exceedingly useful piece of mechanism. Since all admit that baths are essential modes of medication, the more familiar the people are with simple processes for administering them, the better it must be for the public health in every community.

Surgical Operations on Horses.—In Dr. Stewart's late publication, referred to last week, a minute and graphic account is given of the present condition of the veterinary school and hospital at Alfort, three miles from Paris. The whole is richly worth reading, because it shows the attention of the Government to the wants and necessities of domestic amimals in the service of man, in training up persons scientifically to relieve them when sick and distressed. But there is one matter connected with this celebrated school, that is disgraceful to the age, and absolutely wicked. Two days of each week are set aside for operating days, says the author; and old, broken down horses are provided by the Government, for the barbarous purpose of being *dissected alive*. Many of the operations performed, are wholly useless, and the cruelty exercised by the young students engaged in them, unpardonable and disgraceful. Ten or a dozen horses, purchased at about twenty francs a head, are provided on each of the operating days, thrown down, and all their limbs tied together. A tourniquet is fastened to the under lip to keep the head down. From 5 o'clock in the morning till 5 in the afternoon, the poor creatures are subjected to all the mutilations the young barbarians of pupils choose to practise upon them. Each horse has to undergo *sixty-four operations!* Should he still breathe, an end is put to his miseries by being cut up for the use of the menagerie at the Garden of Plants. When the horse is thrown, one holds his head with the abominable tourniquet, while a dozen students cut and hack him in the most disgusting and cruel manner. Some engage in extirpating the eyes, others the ears, taking up arteries, amputating his legs, &c. In a word, the wretched beast is subjected to every operation that can be performed, as well as those which could never be advantageously practised on a wounded animal.

Retention of Urine, with cartilaginous Stricture, and enlarged Prostate.—An interesting case of retention of urine is narrated by Mr. Macilwain, as having occurred in the person of a man, 67 years of age, who had had symptoms of stricture for about twenty years. On examination, the obstruction was found to be situated at the membranous portion of the urethra, and the prostate considerably enlarged. The bladder was greatly distended, having risen nearly to the umbilicus, and the man had a double inguinal hernia, meeting in front of the pubes. Failing to pass a catheter, paracentesis of the bladder, through the abdominal parietes, was practised, the herniæ having been previously reduced, and the contents of the bladder were drawn off. Some relief was experienced from the operation, but the patient soon sunk. On examination of the body, the bladder (in appearance not unlike a gravid uterus) was seen to be enormously thickened, and of an exceedingly dense, firm structure; its mucous surface being thrown into large folds, resembling the carneæ columnæ of the left ventricle of the heart, and exhibiting, in different parts, patches of increased vascularity. The viscus contained a quantity of highly-offensive muco-purulent fluid. The prostate was enlarged to double its ordinary size, and just in front of the membranous portion of the urethra, there was a considerable thickening of the canal, of cartilaginous hardness, which had so nearly obliterated it that it would not admit a small probe. There was not any infiltration of urine. The herniæ on each side, which had existed fifteen years, were formed, that on the right by the cœcum, and on the left by the sigmoid flexure of the colon.

Prolonged Period of Gestation.—Charles Bates, Esq., one of the Overseers of the Poor in the town of Weymouth, Mass., recently addressed an official communication to the Overseers of the Poor in Boston, in regard to a pauper, of whom this remarkable statement is made. "Henry Wilson is about *fifteen years old*—and has lost one of his legs. His father's name was John Wilson, and died about *eighteen years since.*" It may become a question of curious import, between the city of Boston and the authorities of Weymouth, touching the legitimacy of this boy. In no work on Medical Jurisprudence extant, is a parallel case cited, where a child was born two whole years after the death of his father.

Vital Efforts of the System.—At the last meeting of the Medical Society of the Temple, several curious facts were mentioned. M. Lozes stated that in 1830, a woman broke a pane of glass, and was slightly wounded in the hand; the part soon got well. In 1838, she was seized with a pain in the bend of the arm, and a foreign substance being easily felt, an incision was made, and a piece of glass four centimetres in length was removed.—A lady, in making a sudden movement, ran a needle into her hand, which she asserts never came out. Some months after, she became in the family way, and during pregnancy complained that something pricked her near the umbilicus. She was, however, delivered without accident, of a fine child. Two months after, an abscess formed itself in the infant's thigh, broke, and a needle, completely oxydated, was expelled, and which the mother affirms to be the identical one that entered her hand.—M. Gaide gave the details of a *post-mortem* examination of a prisoner at Clairvaux. The man had swallowed, eight or ten years previous to his death, an iron fork. The prongs were directed upwards, the back of the fork corresponding to the anterior wall of the stomach; several excrescences had sprung up on the mucous membrane between the prongs, and kept the fork motionless. The central parts pierced the coats of the stomach, and penetrated the transverse colon; finally the handle touched Poupart's ligament, which offered a slight depression.

Hydrocele treated by Acupuncture.—Mr. Fergusson, of King's College, was consulted in February last by a gentleman 50 years of age, who had long labored under a hydrocele, which had been recently converted into a hematoid. On examination he found a hard and sharp projection at the lowest and back part of the testicle, which was supposed to be an enlargement of the epididymis. The fluid having collected sufficiently by the month of April, it was evacuated by the trocar and canula, and the testicle, submitted to careful examination, found to be healthy. The sharp point previously noticed was very distinct. Mr. Fergusson soon after laid open the scrotum, and passed in his finger, which came in contact with a hard substance, which proved to be an ordinary Whitechapel sewing needle, two inches in length, previously used by the patient in acupuncture. The point seemed lodged in the lower end of the testicle, and the other extremity was held fast in the thickened tunica vaginalis. The subsequent treatment presented nothing worthy of notice.

Protracted Sickness.—It is related in the Exeter Flying Post, an English paper, that there died in Exeter, 12th of August, at Bishopsteighton, near Teignmonth, Nathaniel Harris, a laborer, who has been paralyzed and bed-ridden for a period of 42 years; he was suddenly seized about the age of 18, and has since been fed and attended by three parties consecutively, who have all died in the same room. He was perfectly sensible to the last.

Medical Miscellany.—Dr. Trowbridge, the Professor of Surgery at Willoughby University, a well-known and useful practitioner of surgery in the north-western part of the State of New York, has permanently established himself at Watertown.—In the Black River Journal, published at Sackett's Harbor, is an advertisement running thus—"All persons afflicted will do well to call on the *Dutch Doctor*. Dr. Blom is very benevolent, from 3 to 4, dayly—Sundays excepted."—Mr. William Abrams died in Boston on Wednesday, Sept. 27th, at the age of 101 years, 8 months and 11 days.—Surgeon Charles Chase, U. S. N., is ordered to the receiving Ship Boston; Surgeon L. B. Hunter, to Ship Princeton; Assistant Surgeon E. Hudson, to Sloop of War Warren at Norfolk.—Dr. McGowan, physician to the Protestant Mission at Jerusalem, has been greatly insulted by some Turkish soldiers, which is likely to lead to some important results.—Glass pipes, coated with bitumen, are made at Lyons, for conveying water—30 per cent. cheaper than iron, and bearing a greater pressure. If this is true, they bid fair to supersede lead in wells and tanks.—A large establishment has been broken up in England, where *tea* was manufactured out of *sloe leaves*.—A Mr. T. J. McNair, somewhere near St. Louis, has published a treatise on animal magnetism, containing its history and gradual advancement in the United States—which might with propriety be styled the march of ignorance.—A resurrectionist has been tried and sentenced to pay $1000 for disinterring a body in Michigan.—Dr. S. Thomson, the founder of the Thomsonian system of practice, died last week in this city, aged 74.

Married,—At Union Village, N. Y., Anderson S. Dean, M.D., of North White Creek, to Helen Louisa, daughter of Hon. Daniel Frost.—In Clinton, Dr. Russell Canly Poss, of Winthrop, to Miss Mary Mohegan, of Clinton.—In Philadelphia, Furman Leaming, M.D., to Miss Mary Curwen.—At Northville, N. Y., Dr. John Riley, of Edinburgh, to Miss A. E. Slocum.

Number of deaths in Boston, for the week ending Oct. 7, 41.—Males, 19—Females, 22. Stillborn, 3.

Of consumption, 5—canker, 2—bowel complaint, 3—brain fever, 1—hooping cough, 3—cholera infantum, 2—lung fever, 4—croup, 1—teething, 2—typhus fever, 1—rupture, 1—diarrhœa, 1—dropsy on the brain, 2—disease of the brain, 1—dropsy, 2—child-bed, 1—infantile, 4—inflammation of the lungs, 1—marasmus, 1—decline, 1—old age, 1—unknown, 1.

Under 5 years, 25—between 5 and 20 years, 1—between 20 and 60 years, 12—over 60 years, 3.

A Caution respecting Nitric Acid.—We not unfrequently see prescriptions in which five or six minims of nitric acid are ordered for a dose, diffused in an ounce or an ounce and a half of fluid. This is a strong dose when the acid is of sp. gr. 1.4, as was the case with the acid generally used until lately. But since the publication of the remarks of Mr. Phillips on the subject, which drew attention to the fact that the acid ordered in the Pharmacopœia is of sp. gr. 1.504, the manufacturers have supplied the article according to the correct standard; and the circumstance not having been sufficiently made known in the medical profession, patients have sometimes suffered from the inconvenience of taking a dose considerably stronger than was intended. In such cases we conceive it to be the duty of the pharmaceutical chemist to impart that information to the prescriber which shall enable him to regulate the dose accordingly.

The maximum dose of acidum nitricum dilutum is stated in the Pharmacopœia to be forty minims (equal to four minims of the strong acid); and we have no hesitation in saying that this quantity is quite sufficient, *unless largely diluted*, to act injuriously on the enamel of the teeth. On reference to some other authorities, we see the dose of strong nitric acid stated as "from five to ten minims;" and on this account might have felt a delicacy in animadverting on the subject, if we had not repeatedly heard serious complaints from patients. An instance lately occurred in which six minims were taken in an ounce of fluid, three times a day. In the course of two or three days, the teeth were found to be seriously injured, to the great annoyance of the medical attendant, who was not aware that he had ordered more than might be taken with perfect safety. In all cases in which it is desirable to administer large doses of this powerful acid, care should be taken to dilute it sufficiently, and the patient should be directed to rinse the mouth with water, or a solution of carbonate of potash, immediately after having taken each dose. These precautions should never be neglected by those who consider the preservation of a good set of teeth of any importance.

We may also observe, that the strong nitric acid should never be used in dispensing in small quantities, as it is impossible to measure a few minims with so much accuracy as a proportionate quantity of the diluted acid.

Nitric acid of sp. gr. 1.504, always contains a considerable portion of nitrous acid, which gives it a pale yellow color. The action of light and air occasions the liberation of oxygen, and the consequent conversion of a further portion of nitric into nitrous acid. According to M. Millon this is the case, more or less, with commercial nitric acid of all densities, but more particularly when highly concentrated; consequently, the Acidum Nitricum P.L. is not a convenient preparation for general use, and should be kept in the dark, and not unnecessarily exposed to the action of the air by the frequent removal of the stopper.—*Pharmaceutical Journal.*

New Books in London.—The Principles of Forensic Medicine—Part I., containing medical evidence, personal identity, age, sex, impotence, rape, pregnancy, delivery, fœticide, infanticide, legitimacy. By William A. Guy, M.B. Cantab., professor of Forensic Medicine, King's College, London.—Animal Physiology; including a general survey of the animal kingdom, with special reference to the human body. By W. B. Carpenter, M.D.